



## Grizzly Bear Predation Part 1: what affects predation opportunities?

Moose are more abundant where forest is commercially harvested, and grizzly bears can take advantage by spending time in specific areas like forest harvest edges, where they eat more prey.

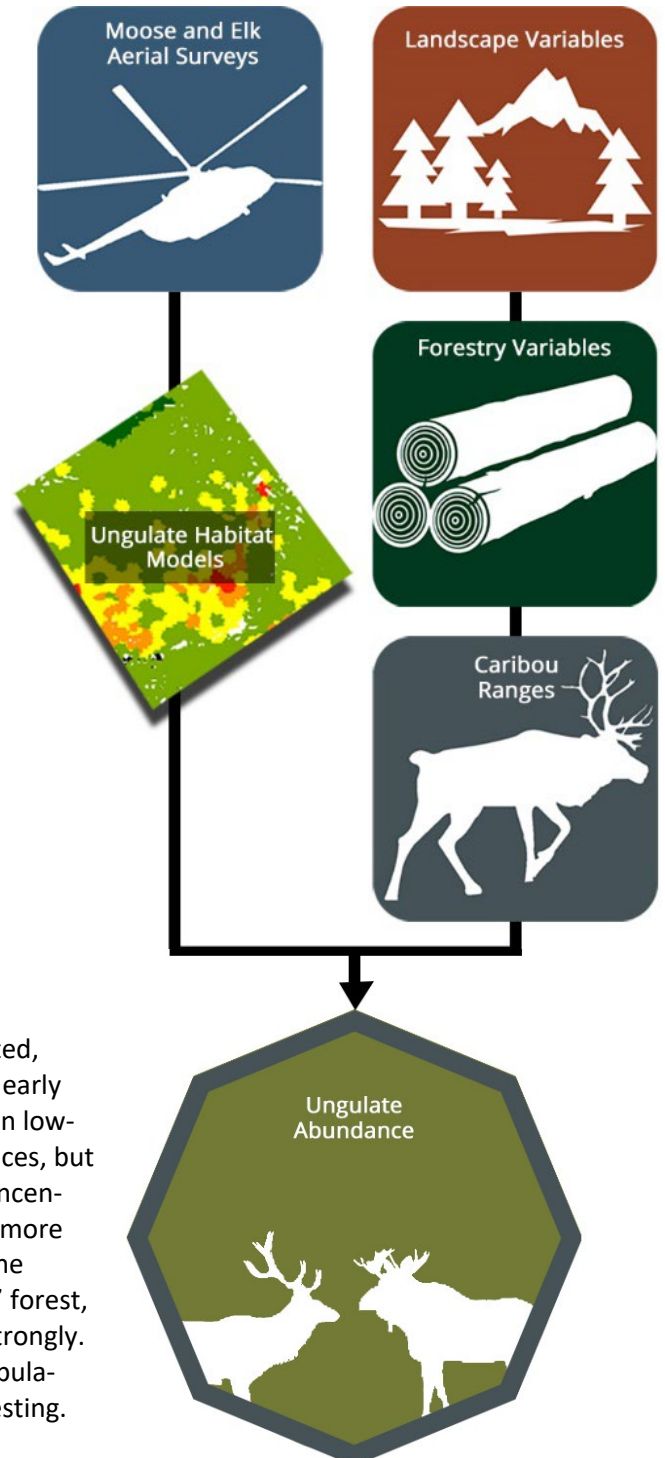
These findings and many others, such as the connection between caribou ranges, elk, and grizzly bear behaviour, come out of a comprehensive study by the Grizzly Bear Program, supported by FRIAA. In this project, completed in 2019 but drawing on over a decade of grizzly bear GPS data, thousands of field site visits, as well as datasets from our colleagues and partners, we have pieced together a comprehensive story of grizzly bear predation in Alberta.

### The Link between Landscape and Prey

The first step was to understand how forestry and other characteristics of grizzly bear habitat are related to the abundance of moose and elk, because of how important they can be as prey for grizzlies. Alberta Environment and Parks, Bighorn Wildlife Technologies, and Teck Resources generously shared aerial survey data with us for the three bear management areas from Grande Prairie down to the TransCanada Highway, giving us over 9,000 observations of ungulates.

Some factors we examined include proximity of forest edge and the possibility of deferred forest harvesting in caribou ranges. We also looked at other habitat variables, like land cover, forest composition, terrain, climate, and other kinds of disturbance. We were looking for a combination of variables that best predicted where ungulates would be found.

We found more moose where there had been more forest harvested, similar to the effect of open canopy forests because there is more early seral vegetation. There were also more moose further north, and in low-lying, wet areas. Similarly, elk are more abundant in wet, treed places, but after that, there is less in common. Unlike moose, elk are more concentrated floodplains and montane grasslands. Elk also seemed to be more common inside caribou ranges, and they were not influenced by the amount of forest harvested. They did seem to avoid “second pass” forest, where the forest is older and the canopy is more closed, but not strongly. This suggests that caribou ranges might be supporting local elk populations, but not as many moose because of the reduced forest harvesting.





### The Link between Prey and Grizzly Bear Locations

Next came the bears. For over a decade, our team has been fitting grizzly bears with GPS collars that give us almost a million hourly locations from 182 bears. The incredible richness of this dataset allowed us to see if grizzly bears are choosing areas near more moose or elk, and how age and sex classes of bears respond, and in which seasons.

We were fully expecting that male bears would be taking greatest advantage of prey abundance, especially in the spring calving season. What we found was a far more complicated story. Overall, bears did select for areas with more moose and elk, but at times they actually seemed to prefer other areas, and there was a lot of variation among the age and sex classes, and between their response to high-moose areas and high-elk areas.

For example, it was new mothers bears who were most strongly drawn to moose-rich places, not males. Another surprise was that bears often had a stronger attraction to those places before calving season started. Bears know that newborn animals peak at this time of year, and in these areas. Elk-rich areas, however, were strongly selected by most grizzly bear classes during calving season.

So far, we have clearly established where these important protein sources are abundant on the landscape, and that grizzly bears often choose these same areas, giving them more predation opportunities. Previous research has supported the rather unsurprising hypothesis that there is more predation when there is more prey availability, and so, having placed the suspect at the scene of the crime, so to speak, we could have called it job done.

Instead, we went much further, traveling to thousands of grizzly locations to see for ourselves how often they really are hunting and scavenging moose and elk. In the next QuickNote, we'll finish the story by reporting the links between forestry, prey abundance, and other landscape characteristics with actual grizzly bear behaviour, and what this means for individuals in the population.

*Terry Larsen led this project. Gord Stenhouse has overseen the Grizzly Bear Program since its inception. This work couldn't have been done without the tireless efforts by dozens of field crew members.*

